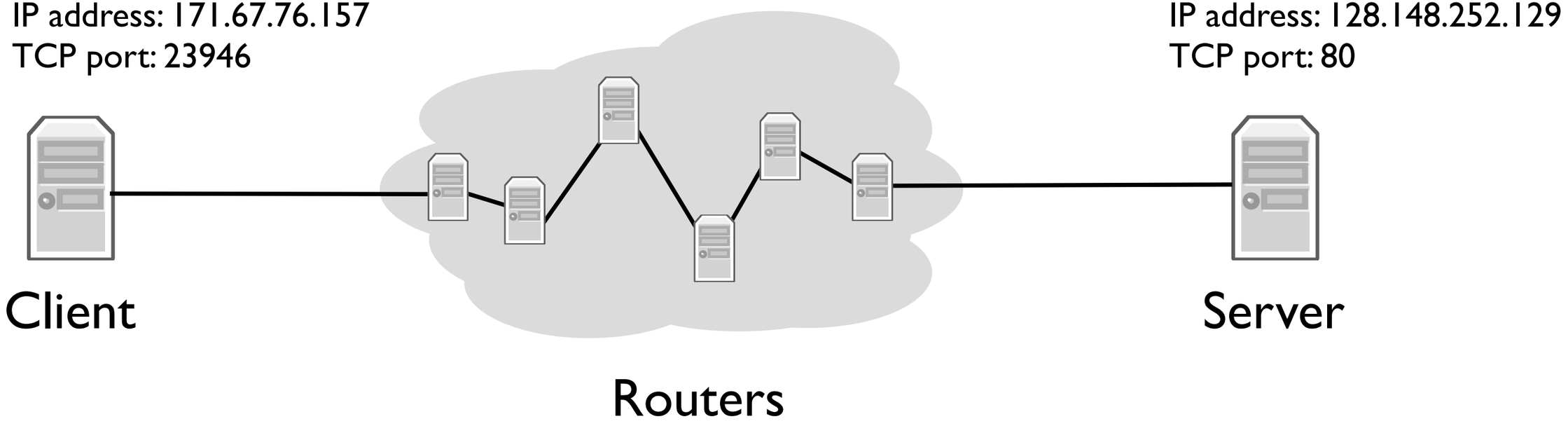
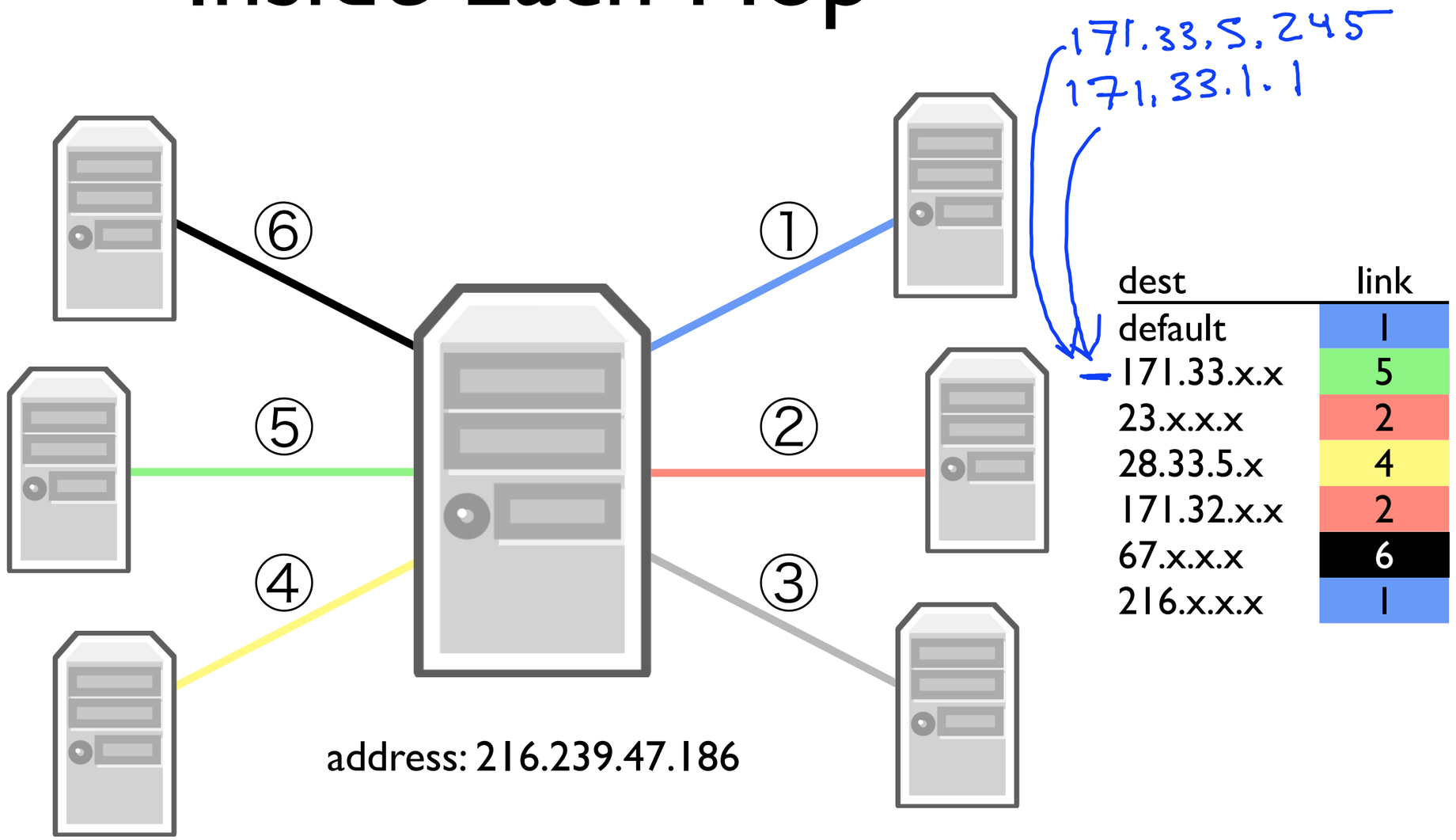
Longest Prefix Match

Inside the Stream



Inside Each Hop

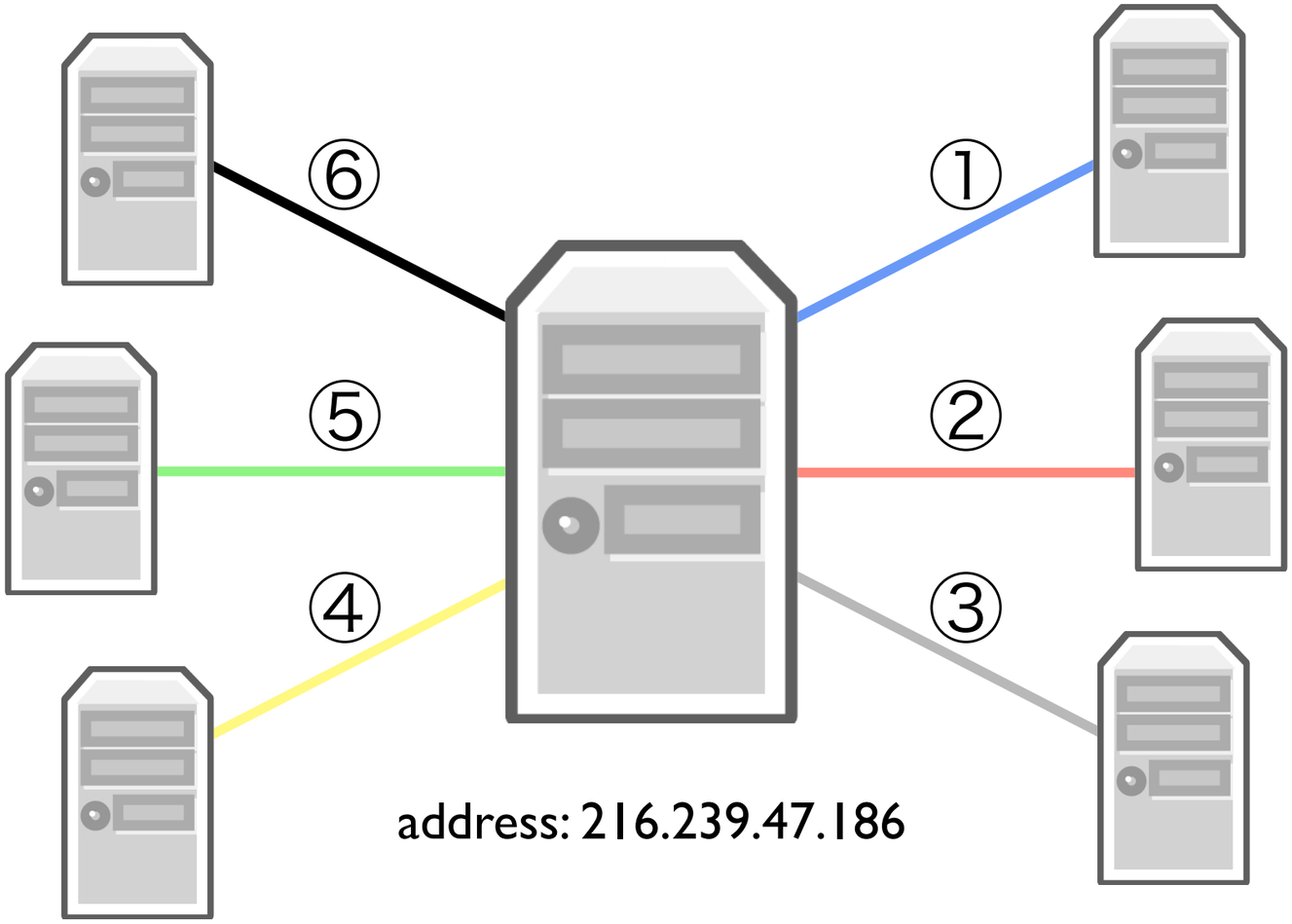


Longest Prefix Match

- Algorithm IP routers use to chose matching entry from forwarding table
- Forwarding table is a set of CIDR entries
  - An address might match multiple entries
  - E.g., 171.33.0.1 matches both entries on right
- Algorithm: use forwarding entry with the longest matching prefix
  - Longest prefix match will chose link 5 for 171.33.0.1

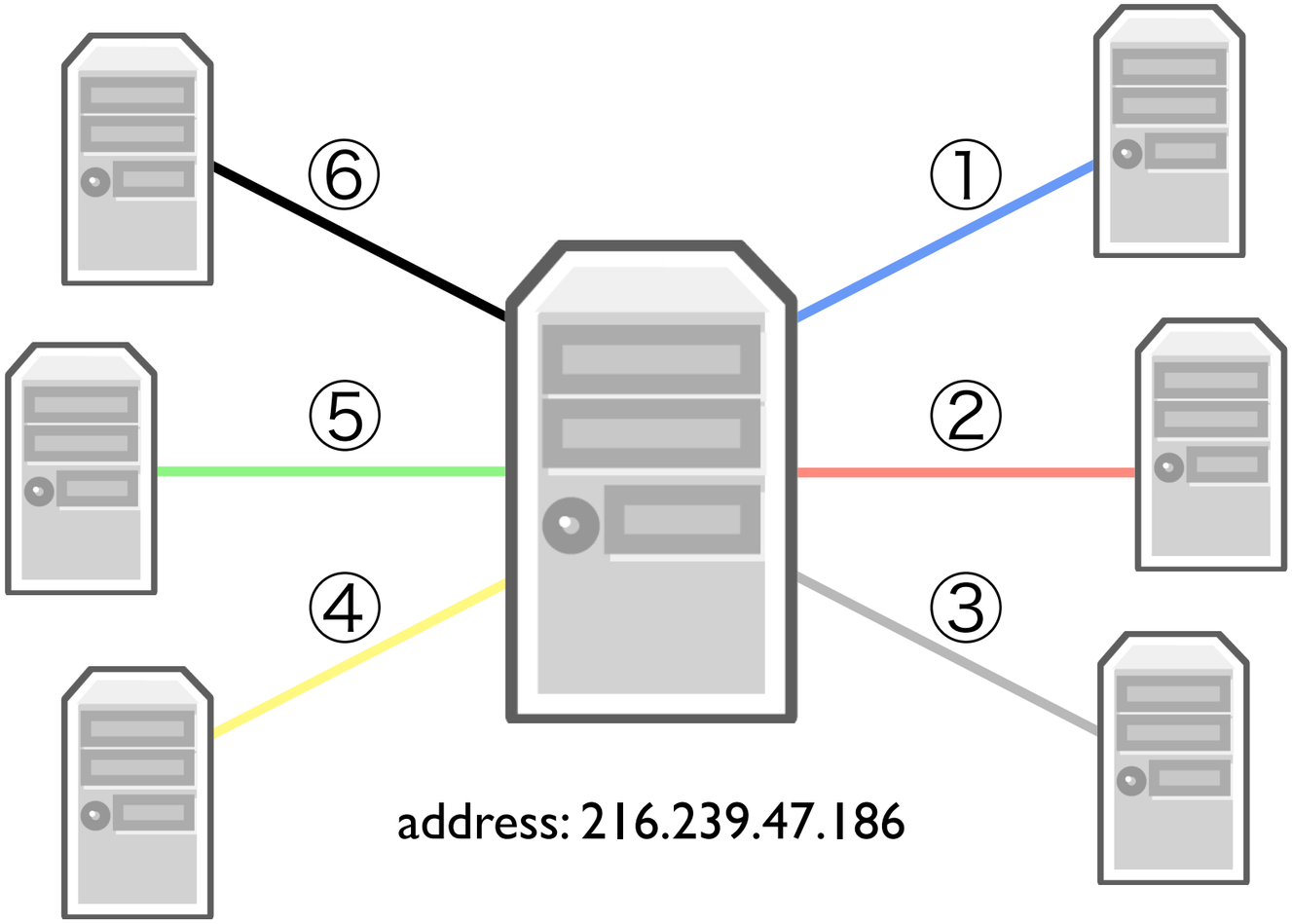
dest	link
0.0.0.0/0	1
171.33.0.0/16	5

Inside Each Hop



dest	link
default	1
171.33.x.x	5
23.x.x.x	2
28.33.5.x	4
171.32.x.x	2
67.x.x.x	6
216.x.x.x	1

Inside Each Hop (for real)



dest	link
default	1
171.33.x.x	5
23.x.x.x	2
28.33.5.x	4
171.32.x.x	2
67.x.x.x	6
216.x.x.x	1

dest	link
0.0.0.0/0	1
171.33.0.0/16	5
23.0.0.0/8	2
28.33.5.0/24	4
171.32.0.0/16	2
67.0.0.0/8	6
216.0.0.0/8	1

Quiz

With the forwarding table on the right, over which link will a router using longest prefix match send packets with the following IP destination address?

A. 63.19.5.3 : link 3

B. 171.15.15.0: link 4

C. 63.19.5.32 : link 1

D. 44.199.230.1: link 1

E. 171.128.16.0: link 2

dest	link	
0.0.0.0/0	1	A B C D E
18.0.0.0/8	5	
171.0.0.0/8	2	B E
171.0.0.0/10	4	B
171.0.15.0/24	1	
55.128.0.0/10	6	
63.19.5.0/30	3	A